NORTHERN & WESTERN BOUNDRY OF THE CREEK COUNTRY

BY

SMITH GREAVES & WOODRUFF

SITE MAP
125 -

35TH CONGRESS, 1st Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 104.

NORTHERN AND WESTERN BOUNDARY LINE OF THE CREEK COUNTRY.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of Captains Sitgreaves and Woodruff of the survey of the Creek Indian boundary line.

APRIL 16, 1858.—Ordered to be printed, together with the accompanying papers and map.

WAR DEPARTMENT,
Washington, April 2, 1858.

SIR: In answer to a resolution of the House of Representatives of the 16th ultimo, calling for a copy of the report of the survey of the southern boundary of Kansas; also Colonel Johnston's report of the practicability of a railroad, and report of survey of the Creek Indian boundary line made by Captains Sitgreaves and Woodruff, I have the honor to transmit herewith the reports and map called for by the resolution.

Very respectfully, your obedient servant,

JOHN B. FLOYD,
Secretary of War.

Hon. JAMES L. ORR,
Speaker House of Representatives.

WASHINGTON, *February* 14, 1850.

SIR: I have the honor to report the progress made in "marking the northern and western boundary lines of the Creek country" during the past summer.

I left Washington on the 1st of May for Cincinnati, where I was directed to stop for the purpose of comparing and rating the chronometers, as well as to hire a portion of my party and provide the necessary supplies.

In consequence of the delay attending the making of the wagons required for the duty, (the large emigration to California having completely exhausted the supply,) and the unavoidable detentions in travelling on the western rivers during a low stage of the water, I did not reach Fort Gibson until the 19th of June. The party was there completed by the hiring of additional men, purchase of animals, &c., and took the field on the 21st of June. It consisted, besides myself, of Lieutenant Woodruff, topographical engineers; Mr. Isaac W. Smith, assistant surveyor; Dr. S. W. Woodhouse, physician and naturalist; a wagon master and thirty men; three ox wagons and one spring wagon for transporting the instruments, and five spare horses. It was found that the requisite blacksmith's tools could be carried in the wagons, and the travelling forge with which I was furnished was, therefore, turned over to the commanding officer at Fort Gibson, and an additional wagon obtained from the quartermaster.

My instructions required me, first, to measure accurately twenty-five miles upon the old territorial line, running north from the Arkansas river. Very few and uncertain indications of this line were found, and the point of beginning could only be conjectured by tracing back the line to the river, as well as the indistinct marks that remained would permit. A post had been originally placed to mark this point, but it had been removed probably by the washing away of the river bank. It was found, therefore, impossible to measure the line upon its old trace; and the only resource was to measure a line as nearly as possible coincident with it, making offsets to it whenever known, or well marked points were discovered, and afterwards to compute the length of the line from the courses and distances actually run and measured. The result was to throw the extremity of this line, or the northeast corner of the Creek country, twenty-two feet to the north of the old mark. The coincidence is striking, and the small difference in the two measurements may easily be accounted for by supposing twenty-two feet of the river bank washed away at the point of beginning.

Up to the time of arriving at this point (July 10) there had been but six days without rain. This necessarily delayed the work, and produced a greater evil in the condition of the prairie, which was rendered so soft as almost to prevent travelling upon it. In the efforts, constantly recurring, to extricate the wagons from the mire, they were repeatedly broken, so as to require several days for repairs; and the flies, a great source of annoyance in this region, had become so troublesome, that some of the animals gave out on every occasion of moving the camp, notwithstanding the precaution of travelling, as far as practicable, only by night, or during the absence of the sun.

Instead of the cast iron post, directed to be placed to mark the northeast corner of the boundary, but which the difficulties of transportation prevented me from carrying, I placed there a wooden post, surrounded by a pyramid of large stones, carefully laid. This mark will be more conspicuous, and as durable and as little liable to removal as the other.

The boundary from this point is a parallel of latitude as far as the

100th degree of longitude west from Greenwich, and a meridian thence south to the Canadian river.

On opening the box containing the portable transit instrument for the purpose of observing for the longitude, the large riding level was found to be broken, having been unskilfully packed by the maker, and the instrument, therefore, useless for the observation of lunar culminations. The rates of the chronometers, also, were unavoidably and so materially changed by their transportation, that the longitude deduced from them could not be depended upon. I was, therefore, compelled to defer its determination to another occasion. By substituting the small level of the theodolite, I was enabled to place that instrument in the meridian with sufficient accuracy, and consequently to determine the perpendicular to the meridian. This latter was prolonged by means of a theodolite, and offsets made from it to the parallel of latitude, a table having been previously computed of the lengths of the offsets for every mile, and their angles with the perpendicular for the observed latitude of 36° 08′ 42″.04 north.

The line was thus run and measured as far as the west bank of the Verdigris river, where a new meridian was determined and the former process repeated. The variation of the needle at both places was found to be 10° east.

The marks left upon the boundary line were wooden posts, squared at one end, projecting six feet from the ground, and surrounded by a mound of stones or earth to half the height of the post. They were placed at intervals of five miles where the country was open prairie, and more frequently in the vicinity of settlements, and at the crossings of principal streams, &c. The whole distance marked was eighty miles, exclusive of that measured on the old territorial line.

Collections of natural history were made by Dr. Woodhouse, whose report, with a catalogue of his specimens, is appended.

The condition of the animals, owing to the deficiency in quantity and quality of the grass upon the prairies towards the end of November, admonished me that the party could not keep the field much longer. I therefore repaired to Fort Gibson, to make arrangements for paying off and discharging the men without unnecessary delay upon their return, leaving directions to Lieutenant Woodruff to continue the work until the end of the month, or until he should complete a distance of sixty miles from the last meridian determined. Upon his return he reported that he had reached that point and had left there a secure mark, and made other marks and measurements in the vicinity by which it could be recovered, if lost. The requisite funds for paying the party were obtained from Messrs. Denckla and Woodward and Mr. W. D. Shaw upon drafts drawn by me upon the Bureau of Topographical Engineers—the first for $1,892 88, and the other for $1,378 81.

Upon leaving Fort Gibson for the field, a portion of the supplies was left there in store, but I nevertheless found it necessary to procure an additional wagon from the quartermaster at that post. As it will not be practicable to establish a depot the next season, the means of transportation will have to be increased. The weight of the army ration of thirty men for six months is 16,455 pounds ; with the army

in Mexico the wagons were limited, ordinarily, to a load of 1,600 to 1,800 pounds, never exceeding 2,000 pounds. It will require, therefore, six additional wagons to carry the requisite supplies for the time the party will probably be in the field. It is likely these may be obtained from the quartermaster at Fort Gibson; but the animals for their draught will, I suppose, have to be purchased.

The experience of the last summer proved to me the impossibility of a party engaged in the duties of the survey affording proper protection to itself. The men are unavoidably separated a considerable distance from each other, either singly or in parties of two or three, and are unable, most of them, to carry their arms; and in moving the camp the wagons are almost always, from the necessity of selecting a practicable route, removed beyond the reach and out of sight of the party in the field, and both are thus at the mercy of any evil-disposed band of Indians they may encounter. Operations of surveying, being incomprehensible to savages, are regarded by them with suspicion. I was informed by the chief of the Creeks, through their agent, on my return to Fort Gibson, that the Osages, though living on the borders of the settlements and having considerable intercourse with the whites, were much incensed at learning that the line was to be continued beyond the habitable region; that they would listen to no explanations or remonstrances on the subject, and declared that they would not permit the work to be carried on over the country which supplies them with game, and to which they conceived they have a common right. It will doubtless cause much greater dissatisfaction to the more predatory tribes of the plains. In view of these circumstances, I feel it my duty to ask for an escort of troops for the coming summer.

I have the honor to be, very respectfully, your obedient servant,

L. SITGREAVES,
Brevet Captain Topographical Engineers.

Colonel J. J. ABERT,
Corps Topographical Engineers.

Results of observations made to find the latitude of the point from which was determined, by measurement, the position of the monument at the northeast corner of the Creek country.

RESULTS FROM DOUBLE ALTITUDES OF NORTHERN STARS.

Stars.	1849.	Latitudes, each observation.	No. of altitudes.	Products.	Sums of products.	Sums of altitudes.	Final means.
		° ′ ″		″			° ′ ″
Polaris	July 24	36 11 32.17	9	829.53			
Do	25	36 10 30.45	15	456.75	1286.28	24	36 10 53.59
Do	27	36 10 37.64	10	376.40	1662.68	34	10 48.90
2 Ursæ Minoris	30	11 55.29	11	1268.19	2930.87	45	11 05.13
δ ..do....do....	30	11 23.70	9	753.3	3684.17	54	11 08.23

Mean of 44 double altitudes..... 36° 11′ 08″.23.

RESULTS FROM DOUBLE ALTITUDES OF SOUTHERN ST&RS.

Stars.	1849.	Latitudes, each observation.	No. of altitudes.	Products.	Sums of products.	Sums of altitudes.	Final means.
		° ′ ″		″			° ′ ″
Antares	July 14	36 06 42.26	7	295.82			
Do	19	6 36.94	20	738.80	1034.62	27	36 06 38.32
Do	20	7 01.79	21	1297.59	2332.21	48	48.58
Do	27	6 55.94	18	1006.92	3339.13	66	50.59
Mean of 66 double altitudes of Antares							36 06 50.59
Mean of 54 ... ..do ..... northern stars							36 11 08.23
Mean of 120 ..... do							36 08 13.52
2883.37 ÷ 101.1 = 28″.52 south of monument							28.52
Latitude of monument, northeast corner							36 08 42.04

PHILADELPHIA, *February* 20, 1850.

SIR: I have the honor of laying before you a short account of the natural history of the country over which your command passed while engaged in running the creek boundary, and to which I had the honor to be attached, the greater part of which is a rich alluvial, and in many places, I think, not to be surpassed, for all ordinary purposes of cultivation, by that of the Mississippi river.

It is of the coal formation, being of the red sand and mountain limestone. This formation prevailed throughout the extent of country examined. The limestone contains fossils common to that formation, such as corals, enerinites, and shells such as producta spirifer, &c. The coal is bituminous, and I observed it making its appearance at various points. At some places on the prairie it was within three feet of the surface. The strata would average about one foot thick. These are, however, the primary strata; in the collection I have specimens illustrating the series.

The falls of the Verdigris, about five miles from its mouth, are crossed by a ledge of slaty sandstone, dipping about ten degrees to the northwest, exhibiting impressions of serpentine caryopyllite, and extending across the river, over which the water falls (at an ordinary stage of water) two feet. Above this we find slate, and above it a curious conglomerate composed of clay, iron, enerinites, and other substances.

A short distance from the falls we enter the great Osage prairie, a beautiful rolling country, interspersed with numerous remarkable natural mounds. In many places, however, we found it quite rough, the lime and sandstone making their appearance, and covered with a species of cactus, (*C. ferox.*)

Within three miles of the northeast corner of the boundary there is an extensive saline, (which has been worked by the Indians at different times,) and it appears to be a gravelly alluvial, destitute of all vegetation. On one side of this there runs a small fresh water stream, which empties into the Neosho about one-fourth of a mile distant, on each side of which there are high rocky banks, formed of slaty sandstone. In the centre of this arena there is a well, from which there issues a copious stream of pellucid salt water. There are also springs at numerous other points, all of which emitting

bubbles of sulphuretted hydrogen, which deposits a slight scum of sulphur on the stones and other substances with which it comes in contact. In the vicinity of the corner we found iron ore.

On the eastern shore of the Verdigris, where the line crosses, there are high bluffs of slaty sandstone.

Now, there is nothing of much interest until we strike the timbered hills of the Arkansas; on the tops of some, the limestone dropping out presents a strange appearance, being in large oblong and cubical masses, about six feet high above the surface, with horizontal strata. These, at a distance, have much the appearance of an old fortification. Then on the Arkansas the red sandstone makes its appearance on both sides of the river.

The large streams are all well timbered, the principal part of which timber consists of cottonwood, oak, and pecan.

The oaks found there are the *Quercus alba*, MICH.; *Q. ruber*, LINN.; *Q. tinctoria*, BAT.; *Q. macrocarpa*, MICH.; *Q. stellata*, MICH.

The button-wood, *Platanus Occidentalis*, LINN., and also the cotton-wood, *Populus Lœoigate*, WILLD., grow to immense size; some of which I have seen over four feet in diameter.

The willow, *Salix Longifolia*, MICH.; dogwood, *Cornus Florida*, LINN.; pecan-nut, *Juglans olivae formis*, JUSSIEN; black walnut, *Juglans niger*, JUSSIEN; tulip tree, *Lyriodendron tulipiferæ*, LINN.; poplar-leaved birch, *Betula popli folia*, MICH. On the Arkansas, the cedar *Juniperis communis*, LINN. The elms are the *Ulmus Americana*, MICH.; *U. alata*, MICH.; *U. rubra*, MICH.; sassafras, *Laurus sassafras*, LINN.; persimmon, *Diospyros Virginiana*, MICH.; hackberries, *Celtis Integrifolia* and *Occidentalis*. Climbing over many of these trees is the trumpet-flower *Teconia radicans*, JUSSIEN.

My collection of plants numbers seven hundred and nine specimens, there being many duplicates. The genera *Astar* and *Salidago* I have not examined, few of our botanists being acquainted with them; and there are a few others that I have not yet been able to make out.

The following is a list of the plants:

EXOGENOUS PLANTS.

UMBELLIFERÆ.

Eryngium Leavenworthii, S. & G.
Eryngium Aquaticum, JUSS.
Discloplеura Nuttalii, D. C.

HYPERICUM.

Hypericum Sarothra, MICH.

ONAGRACIÆ.

Gaura?

LEGUMINOSÆ.

Petalosternon Violaceum, MICH.
Petalosternon Caudedum, MICH.
Cassia chœma cristi, LINN.
Schraukia Uncinata, WILLD.
Darlingtonia brachyloba, D. C.
Clisoria Marinæ, LINN.
Stylosauthes Hyspidissima, MICH.

Commelynaceæ.

Commelina Angustifolia, MICH.

ACANTHACEÆ.

Ruella strepens.

LINACEÆ.

Linum perenne, LINN.

PUMULACEÆ.

Lysimeichia citiala, LINN.

SCROPHULARIACEÆ.

Gerardia flava.
Gerardia purpurea.
Buchnera Americana, WILLD.

CAMPANULACEÆ.

Campanula Americana, WILLD.

EUPHORBIACEÆ.

Euphorbia Corolata, WILLD.

GENTIANEÆ.

Salbatio Campestris, NUTT.
Compositæ.

POLYGALACEÆ.

Polygala purpurea, NUTT.

PORTULACACEÆ.

Jalinum teretifolium, PURRH.
Claytonia Virginica, LINN.

LOBELIACEÆ.

Lob. Clatoniana, MICH.

PLANTAGINACÆ.

Plantago Squarrosa, NUTT.

RUDBECKIÆ.

Rudbeckia odorata, NUTT.
Rudbeckia bicolor, NUTT.
Echinacia angustifolia, T. & G.

COREOPSIDÆ

Coreopsio tenuifolia, NUTT.
Coreopsio filifolia, NUTT.

BIDENTIDEÆ.

Bidens crysantemordes, WILLD.

SILPHICÆ.

Silphium Lanciatum, LINN.
Silphium Integrifolium, MICH.

GALLIARDIÆ.

Gaellardia pulchello, FORGUROUSE.

ADENOSTYLÆ.

Conchinum Coelestinum, LINN.

CENTAURIÆ.

Centauria Americana, NUTT.

ELEPHANTOPEÆ.

Elephantophus tomentors, LINN.

VERNONIACEÆ.

Vernonia Arkansina, NUTT.
Vernonia Baldwinii, J. & G.

CARDUINEÆ.

Cirisum mutieum, NUTT.

ADENOSTYLEÆ.

Leatus Brachystehaya, NUTT.
Leatus Scariosa, WILLD.
Leatus Squariosa, var. white, WILLD.
Leatus Spheroida, MICH.

CHRYSOPSYDEÆ.

Chrpsopis pylosa, NUTT.

EUPATORINÆ.

Epatorumi scrotumoni, MICH.
Epatorumi Coelestinum, LINN.
Donia ciliate, NUTT.

ASCLEPIADACEÆ.

Aclepias Vercilillata, MICH.

CONVULVULACEÆ.

Convulous panduratus, WILLD.
Ipomea sucunosa, LINN.

SOLANCEÆ.

Solanum Carolin, WILLD.

LABIATEÆ.

Monarda Mollis.
Tencrium Virginieum, WILLD.
Pyonauthemum longifol, PURSH.
Verbenaceæ.
Verbena.
Lamiaceæ.
Dracocepal, denticul, LINN.
Cinchonaceæ.
Cephalanthus Occidents, LINN.
Houstonia Longifolia, WILLD.
Caprifoliaceæ.
Symphoria glomerata, PURSH.

ENDOGENOUS.

NEOTTIÆ.

Neottia ceruna, MICH.
Neottia Odorata, WILLD.
Grammaceæ.
Elymus Canadensis, LYNN.
Andropagon Macron, NUTT.
Uniola latifolio, MICH.
Digitaria filiformis.
Juncaceæ.
Juncas Tenuis, NUTT.

Of quadrupeds I found but few. The following were seen: The common bat (*Vespertitium Carolinensis*, GROF;) Star-nosed mole, (*Condilusa Cristala*, DESM.;) Racoon, (*Procion laton*, CUV.;) Skunk, (*Mephitis Americana*, DESM.;) Prairie wolf, (*Canis latrans*, SAY.;) Dusky wolf, (*Canis nubilis*, SAY.;) Gray fox, (*Canis Virginiauus*, CATSBY;) Panther, (*Felis buco*, CUV.;) Wild cat, (*Lynx rufus*, GUILD.;) Opossum, (*Didelphis Virginiana*, PENNANT;) Beaver, (*Castor Filex*, LINN.;) Nuttall's mouse, (*Arvicola Nuttalii*, BACH;) Stupid and spotted marmot, (*Spermophillis tudium lineatis*, MITCH.;) Gray squirrel, (*Sciurus Carolins*, GMELIN;) Chicaree, (*Sciurus Hudsonius*, GMEL.;) Rabbit, (*Lepus Americanus*, GMELIN;) Virginian deer, (*Cervus Virginianus*, PENNANT.)

My colllection of birds, I regret to say, is but small, and numbers but fifty-eight specimens. This was owing, however, to our arrival so late in this country, being the 20th of June, before we got under way from Fort Gibson, and the birds had then commenced moulting; on account of which I had to throw away a large number after shooting them.

There is, however, not a very great variety of birds in this section of the country.

On the 16th of August, one of the barrels of my gun burst, which was a great loss, as heretofore I was able to keep one of the barrels loaded with coarse and the other with fine shot, and in that way was always prepared to shoot large or small birds, should they present

themselves; this was the cause of my losing many. I give you below a list of the birds observed by me in this country.

CATHARTES.

Cathartes aura, LINN.
Cathartes atrates, WILS.

BUETO.

Bueto Corealis, GMEL.
Bueto Cineratus, GMEL.
Bueto Haliaetus.
Haliaetus leucocephalus, LINN.

JETINIA.

Jetinia plumbea, GMEL.

NAUCLERUS.

Nauclerus furcatus, LINN.

JALEO.

Jaleo peregrinus, GMEL.
Jaleo sparoerius, LINN.

CIRCUS.

Circus cyaneous, LINN.

SYRMIUM.

Lyrmium Nebulosum, LINN.

BUBO.

Bubo asio? LINN.

CAPRIMULGUS.

Caprimulgus Caroliniensis, GMEL.
Caprimulgus Vociferous, WILS.

CHORDEILES.

Chordeiles Virginians, BONAP.

HIRUNDO.

Hirundo purpura, LINN.
Hirundo bicolor, VIELL.
Hirundo fuloa, VIELL.

MUSCICAPINÆ.

MILOULUS.

Miloulus fortificatus, GMEL.

TYRANNUS.

Tyrannus Intrepidus, VIELL.
Tyrannus Crinitus, SWAINS.
Tyrannus fusca, GMEL.

TYRANNULA.

Tyrannula vireus, LINN.
Tyrannula alcadiea, GMEL.
Tyrannula Trailii, AUD.

CULICIVORA.

Culicivora coevulia, LATH.

SYLVICOLA.

Sylvicola Mitratis, LATH.
Sylvicola aestiva, LATH.
Sylvicola canadensis, WILS.
Sylvicola Virens, WILS.
Sylvicola formosus, WILS.
Sylvicola straita, LATH.
Sylvicola coevulia, WILS.
Sylvicola Americana, LATH.

TRICHAS.

Trichas Marylandica, LATH.

VERMIVORA.

Vermivora prothonotarus, LATH.
Vermivora solitaria, WILS.

MUNIOTILTA.

Muniotilta varia, LINN.

TROGLODITUS.

Troglod. ludovicianus, BONAP.

PARUS.

Parus bicolor, LINN.
Parus atri capillus, LINN.

SIALIA.

Sialia wilsoni, SWAINS.

TURDINÆ.

ORPHEUS.

Orpheus polyglottus, LINN.
Orpheus rufus, LINN.

TURDUS.

Turdus migratorius, LINN.
Turdus mustelinus, GMEL.
Turdus solitarius, WILS.
Turdus mosacilleœ.

SCIURUS.

Sciurus novœ bosexensis, GMEL.

ANTHUS.

Anthus ludovicianus, LINN.

FRINGILLINÆ.

EMBERIZA.

Emberiza americana, GMEL.
Emberiza grammaca, SAY.

TRINGILLA.

Tringilla cyanea, WILS.
Tringilla cneophryris. TEM.
Tringilla gambelii, NUTT.
Tringilla pennsylvan'a, LATH.
Tringilla savanarum, GMEL.

CARDUELIS.

Carduelis tristis, LINN.

PIPILO.

Pipilo arctica, SWAINS.
Pipilo erithropthalma, LINN.

CARDINALIS.

Cardinalis virgins, BONAP.

COCCOBORUS.

Coccoborus coeruls, LINN.

PYRANZA.

Pyranza aertiva, GMEL.

MOLOTHRUS.

Molothrus pecoris, GMEL.

ICTERUS.

Icterus baltimœ, LINN.
Icterus spurius, GMEL.

QUISALUS.

Quisalus major, VIELL.
Quisalus, versicolor, VIELL.
Quisalus ferrugineus, LATH.

STURNELLA.

Sturnella ludoviciana, LATH.

COROUS.

Corous corax, LINN.
Corous americanus, AUD.
Corous ossipagus, WILS.

GARRULUS.

Garrulus crestatus, LINN.

LANIUS.

Lanius ludovicianus, LINN.

VIREO.

Vireo noveboracensis, GMEL.

Vireo olevaceous, LINN.

ICTERIA.

Icteria veridis, GMEL.

BOMLYCILLA.

Bomlycilla caroliniensis, LINN.

SITTA.

Sitta caroliniensis, LINN.

TROCHILUS.

Trochilus colubres, LINN.

ALCEDO.

Alcedo aleyon, LINN.

PICUS.

Picus piliatis, LINN.
Picus principalis, LINN.
Picus villosus, LINN.
Picus pubescens, LINN.
Picus Carolinacus, LINN.
Picus crythrocephalus, LINN.
Picus auratus, LINN.

COECYZUS.

Coecyzus Americanus, LINN.
Coecyzus erythropthalm, WILS.

CENTAURUS.

Centaurus Carolinacus, LINN.

ECTOPISTES.

Ectopistes migratoria, LINN.
Ectopistes Carolinensis, LINN.

MELIAGRIS.

Meliagris gallipavo, LINN.

ORTIS.

Ortis Virginiana, LINN.

JETRAO.

Jetrao cupido, LINN.

RALLINÆ.

FULICA.

Fulica Americana, GMEL.

ORTYGOMETRA.

Ortygometra Carolinica, LINN.

GRUS.

CHARADRIUS.

Charadrius vociferus, LINN.

JOTANUS.

Jotanus Macularius, WILS.
Jotanus vociferus, WILS.

MIEROPTERA.

Mieroptera Americana, AUD.

ARDEANÆ.

Ardea videscens, LINN.
Ardea Herodias, LINN.
Ardea egretta, GMEL.

ANSER.

Anser canidensis, LINN.
Anser bernicula, LINN.

ANAS.

Anas bosehos, LINN.
Anas sponsa, LINN.

PELECANUS.

Pelecanus Americana, AUD.

PODICEPS.

Podiceps carloniu, LATH.

LARUS.

Larus Bonapartii, RICH.

The reptiles are the following. All but those marked thus (*) are in the collection.

Tropidolepis undul., BOSC.
Phrysoma cornutus, HARLAN.
Plestiodon erythroceph., GILL.
Propidonutus sipedon.
Amevia sextineata, LINN.
Crotaphytus collaris, SAY.
Lueata quinqui lineatus.
Letophes aertions, LINN.
* *Corlatus ducissus*, LINN.
* *Trignoncephalus pescivorus*, LOCEPEDE.
Hetrodon sinius, LINN.
Rana sylvatica, LECONTE.

The shells in the collection are principally of the genus Unio, and were collected in the tributaries of the Neosho, Verdigris and Arkansas rivers, near the boundary line. The majority, however, were procured at Chambers' ford, rapids of the Verdigris. The collection comprises 89 specimens, one of which is new, and has been described by my friend, Mr. T. A. Conrad, who has named it after Colonel J. J. Abert.

The following is the description:

Unio Aberti, sub-oval, much compressed, contracted from beak to base; posterior margin truncated; direct basal margin contracted posteriorly; beaks sub-medial, umbonal slope prominent or rigid, round middle of disk, with irregular plice running from unibo to base, becoming obsolete at base; posterior slope, with wrinkled lines and small pliceæ; epidermis olive yellow, with small, very numerous green dots, and a few broad, rather indistinct rays, within pale pink; cardinal teeth thick, direct $1\frac{2}{3}$, $1\frac{3}{8}$.

Local.—Chambers' ford, rapids of Verdigris.

UNIOS.

Unioteres, RAF.
Unioteres anadontoides, SAY.
Unioteres quadrulus, RAF.
Unioteres asperrinus, LEA.
Unioteres quadrulus, RAF.
Unioteres metananer, RAF.
Unioteres nobasus, BARNES.
Unioteres parallelus, CON.
Unioteres costatus, RAF.
Unioteres Siliquordeus, BARNES.
Unioteres Inberculatur, RAF.
Unioteres truncatus, RAF.
Unioteres doniceformis, LEA.
Unioteres purpuratus, LAM.
Unioteres fasciolaris, POF.
Unioflavus, RAF.
Unioflavus Subomatus, LEA.
Unioflavus cylindricus, SAY.
Unioflavus plicatus, SAY.
Unioflavus Mytiloides, RAF.
Unioflavus decliois, SAY.
Unioflavus nodulatus, RAF.
Unioflavus postulatus, LEA.
Margaritona costata.
Alasmondonta costata.
Alasmondonta Edentula, SAY.
Anodon aveotata, SWAINSON.
Pludina ponderosa, SAY.

The large collection of insects which I placed in alcohol, macerated, and almost the entire collection spoiled.

A more detailed account I will furnish you on our return this next season.

I am, sir, with much respect, your obedient servant,

T. T. WOODHOUSE, *M. D.*

Captain L. SITGREAVES,
Topographical Engineers, U. S. A.

LIST OF BIRDS COLLECTED DURING THE SUMMER AND FALL OF 1849 IN THE INDIAN TERRITORY.

Nauclerus furcatus, LINN.; one male.
Ictinea plumbea, GMEL.; one female.
Buteo Lineatus, GMEL.; two, male and female.
Falso sparverius, LYNN.; three males.
Mulvulus forficatus, GMEL.; two females.
Tyranula Virens, LYNN.; one male.
Tyranula acadica, GMEL.; one male.
Tyranula Trailii, AUD.; two, male and female.
Sylvicola Coerulia, WILS.; two, a young male and female.
Sylvicola formosa, WILS.; four, two males and females.
Sylvicola mitratis, LATH.; seven, four males, one male, and two young females.
Vennivora solitaria, WILS.; one female.
Vennivora prothonitarius, LATH.; three, two males and one female.
Trichas Marylandica, LATH.; one male.
Hirundo fulva, VIELL.; five, one male, two females, and two young.
Hirundo bicolor, VIELL.; one female.
Coccoborus coerulius, LYNN.; two males.
Emberiza Americana, GMEL.; three females.
Fringilla Cyanea, WILS.; one female.
Fringilla Gambela, NAT.; two females.
Tyranga aestiva, GMEL.; three, two males and one female.
Troglodites Ludovicianus, BONAP.; one male.
Charadrius vociferous, LYNN.; one female.
Fulica Americana, GMEL.; one female.
Totanus Vociferous, WILS.; one male.
Larus Bonapartii, RICH.; one.
Picus Carolinus, LYNN.; two, male and female.
Picus pubescens, LYNN.; two young males.

LIST OF SHELLS.

	No. of specimens.		No. of specimens.
Unio teres, Raf.,	18	*Unio cylindricus*, Say.,	2
Unio flavus, Raf.,	3	*Unio Aberti*, Con.,	1
Unio subornatus, Lea.,	7	*Unio lineolatus*, Raf.,	1
Unio quadrulus, Raf., *Unio asperrimus*, Lea.,	1	*Unio capillaris*, Say.,	1
		Unio plecatus, Say.,	6
Unio quadrulus, Raf.,	4	*Unio mytiloides*, Raf.,	5
Unio metananer, Raf., *Unio nodosus*, Barnes.,	3	*Unio declivis*, Say.,	1
		Unio nodulatus, Raf., *Unio pustulosus*, Lea.,	7
Unio Parallelus, Con.,	2		
Unio costatus, Raf.,	4	*Unio subrastratus*, Say., *Unio Inis*,, Lea.,	1
Unio silignoideus, Barnes.,	5		
Unio tubuculatur, Raf.,	1	*Pludina ponderosa*, Say.,	1
Unio truncatus, Raf., *Unio doniciformis*, Lea.,	4	*Margaritana costata*, *Alasmondonta costatus*, Raf.,	1
Unio purpuratus, Lam.,	4	*Anadon aureolata*, Seranis.,	1
Unio fasciolani, Raf.,	3		

PLANTS.

	No. of specimens.		No. of specimens.
Eryngium Leavenworthii, T & G.,	31	*Buchnera Americana*, Willd.,	9
Eryngium aquaticum, Jessien.,	2	*Campanula Americana*, Willd.,	5
Discopleura Nuttalii, D. C.,	2	*Euphorbia corolata*, Willd.,	6
Hypencuni sarothra, Michx.,	19	*Sabbatia campestris*, Nutt.,	4
Guara?	1	*Liatris brachistchaya*, Nutt.,	6
Pitalostamon violaceum, Michx.,	8	*Liatris Squariosa*, Willd.,	7
		Liatris scariosa, Willd.,	9
Pitalostamon candidum, Michx.,	6	*Liatris, white var.*, Willd.,	6
		Liatris sphoeroidea, Michx.,	2
Cassia chœmacristi, Lynn.,	5	*Chrysopsis pilosa*, Nutt.,	57
Schrankia uncivata, Will.,	2	*Eupatorium serotinum*, Michx.,	1
Darlingtonia brachiloba, D. C.,	8	*Rudbeckia odorata*, Nutt.,	1
Clitona marina, Lynn.,	5	*Rudbeckia bicolor*, Nutt.,	1
Stylosanthus hispidissima, Michx.,	26	*Rudbeckia* ——.,	3
		Echinacea angustifolia, T. & G.,	1
Commebria angustifolia, Michx.,	1	*Coreopsis tenuifolia*, Nutt.,	6
		Coreopsis filifolia, Nutt.,	1
Polygara purpurea, Nutt.,	15	*Bidens crysantemoides*, Willd.,	3
Ialinum teretifolium, Pursh.,	7	*Silphium lanciatum*, Linn.,	2
Clatonia Virginica, Linn.,	1	*Silphium integrifolium*, Michx.,	4
Lobelia Claytoniana, Michx.,	5	*Gaillardia pulchella*, Torquerone,	8
Plantago Squariosa, Nutt.,	13	*Buchnera Americana*, Willd.	
Ruella Strepens, ——,	1	*Campanula Americana*, Willd.	
Linum perenne, Linn.,	23	*Aster*,	86
Lysimachia ciliata, Linn.,	1	*Solidago*,	41
Gerardia flavo, Linn.,	3	*Euphorbia corolata*, Willd.	
Gerardia purpurea, Linn.,	13	*Sabbatia campestus*, Nutt.	

	No. of specimens.		No. of specimens.
Conclinum cœlestinum, LINN.,	7	*Spomea lucunosa*, LINN.,	2
Centaurea Americana, NUTT.,	5	*Solanum Carolinense*, WILL.,	1
Elephantophus tormontosus, LINN.,	6	*Cephalanthus Occidentalis*, LINN.,	6
Vernonia Arkansina, NUTT.,	3	*Houstonia Longifolia*, WILLD.,	2
Vernonia Baldwinii, T. & G.,	1	*Symphona glomerata*, PURSH.,	2
Lespedera,	7	*Neottia ceruna*, MICH.,	2
Eupatorium,	9	*Neottia odorata*, WILLD.,	5
Erigonum,	6	*Clymus Canadensis*, LINN.,	7
Circium muticum, NUTT.,	9	*Graminæ*,	10
Monarda Mollis,	7	*Andropogon macronrum*, NUTT.,	10
Tenerium Virginicum, WILLD.,	3	*Uniola latifolia*, MICH.,	3
Pycnanthemum linifolium, PURSH.,	3	*Digitaria filiformis*,	2
Verbena,	5	*Panicum*,	1
Dracocephalum denticulatum, LINN.,	12	*Juncus tennis*, NUTT.,	6
Asclepias vertiallata, MICH.,	1	*Helianthus*,	2
Convolvulus panduratus, WILL.,	2	*Erigeron*,	3
		Hedysarum,	6

BUFFALO, N. Y., *September* 1, 1851.

SIR: The officer in charge of the survey of the northern and western boundary of the Creek country having been relieved from this duty, agreeably to the orders of the Bureau of Topographical Engineers, dated April 18, 1850, I succeeded him in the prosecution of the survey and demarkation of that country.

My assistants were Mr. J. W. Smith, civil engineer, and Dr. S. W. Woodhouse, medical officer and naturalist; both of whom were employed on the duty the previous season. In addition to them, were engaged Mr. W. C. Mayhew, and Mr. J. R. Smith, as sub-assistants, and Mr. A. R. Potts, as quartermaster and commissary of subsistence.

Preparations needful for the carrying into effect these orders detained me in Washington city until the 1st of May; and further detention occurred in Cincinnati, Ohio, for the purpose of purchasing subsistence stores, and for hiring men suitable for the immediate work of the survey, as chronometer, instrument, and chain bearers. We were aware that the best teamsters and axe-men could be hired in the vicinity of the frontier posts, but it was deemed advisable to procure a few hands at this place, upon whom we could rely for the faithful performance of certain portions of our labors in the field.

After frequent delays on the Arkansas river, owing to the very low stage of water, we reached Fort Smith, where we were obliged to land our stores, to await the arrival of a boat of lighter draught to transport them to the landing on the Verdigris river, near the Creek agency. The party and stores were left at Fort Smith, under the charge of Captain Potts, who took advantage of this delay in purchasing draught animals.

Having been furnished, through the kindness of Captain Montgomery, the quartermaster at that post, with transportation for myself, one assistant and three men, we proceeded to Fort Gibson, Creek Nation, where the astronomical and surveying instruments had been deposited, with the exception of the chronometers, which we brought with us from Washington city. The camp equipage, ordnance, and property belonging to the survey had also been stored at Fort Gibson, which was put in readiness, that we might move on the arrival of our party and stores from below.

We immediately established a camp on the west bank of the Neosho river, directly opposite to Fort Gibson, where we commenced a series of observations for latitude and longitude.

The chronometers, Nos. 2057 and 2096, (Dent,) were at first rated by means of equal altitudes of the sun with a sextant by Troughton & Simms.

A portable transit (Patten's) was used to observe the culminations, having for its support a solid log of about 22 inches in diameter, and five feet long, firmly imbedded in the ground half its length, the top of which was, as nearly as possible, a horizontal plane—a support sufficiently stable, as no deflection of the level was observed while walking around it. A tent, with its roof movable in the direction of the meridian, furnished a covering for the transit when not in use.

The observations for rating the chronometers were much interrupted by cloudy weather; and from the same cause, but four sets of culminations of the moon and moon culminating stars of the Nautical Almanac were observed during the entire lunation of the month of June. The preliminary computations were daily made in the event of the weather being such as to permit an observation.

The meridian of the station passes through the old block house on the east bank of the river.

These observations were sent to Captain T. J. Lee, corps of topographical engineers, at the Bureau of Topographical engineers, who kindly caused them to be computed for me, the results of which were sent to me in the field for use in the subsequent observations on the boundary survey.

Finally, on my return to Washington, all of my observations for longitude were placed in the hands of Captain Lee, who requested Mr. John Downes, of Philadelphia, to compute them, the results of whose computations have been adopted.

Captain Lee, also furnished me with an aneroid barometer, which, while we were at Fort Gibson, on going out, and after our return, was compared with the mercurial barometer at the hospital department. The record of the comparison is herewith annexed, and for which I am indebted to Dr. Wells, United States army, surgeon of the post.

In order that the observations at Fort Gibson might be combined with the subsequent astronomical observations on the boundary, a survey was made, connecting the station of observation with the survey of the boundary.

Ere the conclusion of these observations, the party and stores had arrived, and preparations were made to start for the point where the work ceased the previous season, which was distant about one hun-

dred miles by the wagon route. Thus far the same route was passed over by Captain Buford, of the dragoons, a few years since, from Fort Gibson to Santa Fé.

The northern boundary of the Creek country, on the parallel of 38° 8′ 42″ north latitude, had been surveyed and marked the previous season to a distance of seventy-nine (79) miles and 890 feet, on the guide lines, or, when reduced to the parallel, 79 miles and 870 feet.

There then remained to be surveyed and marked the distance from this point to the 100° longitude, upon the same parallel, and thence the western boundary, on that meridian, south to the Canadian river; also the determination of the 100° by a series of astronomical observations.

1st. Of the determination of the 100° of west longitude from Greenwich. The instructions of Captain Sitgreaves were as follows: "As you cannot foretell the nature of the country as regards supplies, encampments, &c., where this point will fall, you should not trust to making the necessary observations (which will require from two to three weeks) at the point itself, but rather make all the observations near the point of beginning, and trust to your measurements to determine the end of the line."

In accordance with the above, which was likewise to govern my operations on the duty and while we were awaiting our stores, the observations were commenced at Fort Gibson, as I have already stated. And at the point where the work ceased last season, we commenced another series of observations. The transit supported in like manner as explained before, and sheltered by a tent. Six sets of observations of the culminations of the moon and moon culminating stars of the Nautical Almanac were taken during the lunation of the month of July. Cloudy weather prevented observations on the other nights of the lunation. The computations were invariably prepared in anticipation of an observation.

This point of observation, according to measurement, is 83 miles and 33 thousandths west of the station of observation at Fort Gibson. Again: at a point west of Fort Gibson, 179 miles and one thousandth distant by measurement, two more sets of observations of the moon and moon culminating stars were obtained. Here it became necessary to determine a new prime vertical for the guide line in the prosecution of the work of the boundary; and the lunation of the month of August occurred while here, which enabled us to obtain these two observations. The unfavorable nature of the country at this point, as regards water, all of which was impregnated with Glauber salts, and the use of which was endangering the health of the party, prevented our continuing the series of observations.

At the three different stations, connected by careful measurement, namely, at Fort Gibson, at a point 83.033 miles west of Fort Gibson, and at a point 179.001 miles west of Fort Gibson, we have obtained twelve sets of observations for the determination of the 100° west longitude. These results will be regarded as approximations, from the condition of the instrument used in the observations.

The high degree of temperature during the day acting upon the tube of the transit, expanding with it the diaphragm containing the

wires, strained them to their utmost degree of tension, sensibly impairing them; for when cooled by the low temperature at night, the period of observation, the wires no longer retained a rectilinear position. The value of the intervals had changed and was not constant, varying with the expansion and contraction of the metallic tube. This, it seems to me, will account for the variableness in the results.

The observations at Fort Gibson were not affected to the same degree as those were at the second station of observation, the range of temperature, from day to night, being less at Fort Gibson. Nor were they affected at the third station so much, for the same reason.

Having at hand no series of observations of lunar culminations with the portable transit, to which to refer, I am unable to arrive at the comparative value of the results.

The longitude of Fort Gibson, as observed, is $6^h\ 21^m\ 00.41^s$. The longitude of Fort Gibson, from observations at the second station, (83.033 miles west of Fort Gibson,) by measurement is $6^h\ 21^m\ 08.46^s$. The longitude of Fort Gibson, as deduced from observations at the third station, (179.001 miles west of Fort Gibson,) by measurement is $6^h\ 20^m\ 53.89^s$. Assuming these results as equivalent in value, we will have the longitude of Fort Gibson, as observed and deduced, $6^h\ 21^m\ 00.92^s$, a result which accords very nearly with the result of the observations actually made at Fort Gibson.

The longitude of Fort Gibson, in arc, is 95° 15′ 13.8″. The meridian passing through the northeast corner of the Creek country is west of the station at Fort Gibson, by measurement, a distance of four miles and 651 thousandths, which, on the parallel of Fort Gibson,* is equal to 19.86″ of time, or in arc 4′ 56.9″, which gives the longitude of the starting point of the northern boundary of the Creek country, 95° 20′ 10.7″. The length of the northern boundary comprised between this point and the 100th degree in arc is 4° 39′ 49.3″, which is the latitude of the parallel of 36° 8′ 42′, (as determined the previous season by the sextant,) in statute miles, is 260.1333, (two hundred and sixty miles and 1333 ten-thousandths.)

The distance surveyed and marked the previous season was 79 miles and 890 feet, or, reduced to the parallel, is 79 miles and 870 feet. The distance surveyed and marked this season and reduced to the parallel is 120 miles and 792 feet.

The entire distance surveyed and marked is 199.3148 miles, leaving a distance on the northern boundary not marked, 60.8185 miles, or an arc of 1° 5′ 56.35″, besides leaving unmarked the western boundary, a distance not exceeding 20 miles.

2d. Of surveying and marking the boundary.

The meridian having been determined, the next step was laying off on the ground the direction of the prime vertical for the guide line of the survey, which was done with the theodolite, by repeated measurements on different portions of the limb of the instrument.

Two targets were used in prolonging the guide line; they and the instrument were carefully centred over the stations. The measuring

* The latitude of Fort Gibson (old block-house) is 35° 47′ 34.85″, resulting from 37 altitudes of south stars and 10 altitudes of a north star.

chain was 50 feet in length, and daily compared with the standard measure.

The measurements were all made under the supervision of one of the assistants, who also noted the topography upon the line; the more distant topography was sketched by another assistant, whose duty was to establish the intermediate positions between the principal stations. These secondary stations, owing to the undulations of the ground, were very numerous, and were the guiding stations for the chain measurements.

The boundary, which is a parallel of latitude, was marked by monuments of stone, whenever it could be procured, or by posts and mounds of earth, offsets being laid off to the north of the guide line in this case.

The monuments were generally distant about five miles. The first monument erected was of stone, 200 feet from the point of beginning, and upon the crest of the ridge; the terminating point the last season had been marked with a wooden post and mound of earth. The stone monument is more easily distinguishable, and southwest of it, 786 feet distant, stands a bald mound, which is about 100 feet long by 20 wide, and elevated about 20 feet above the general level of the ridge. I have referred more particularly to this locality, as the second station, where observations for longitude were made, is at this point. The station is east of the stone monument 2,768 feet, and south 1,359 feet. There are but three other points marked with stone monuments. Elsewhere facilities for procuring it were either not at hand, or too much delay would have been incurred in carting it.

The guide line was prolonged 44 miles and 84 feet, reduced to the true measurement on the parallel, when a new meridian was determined by the method of high and low stars, and the prime vertical carefully laid off as before with the theodolite. The delay of several days at this point for these observations enabled us to mark this point on the parallel where the new guide line commenced with a durable monument of stone.

The new guide line was prolonged 51 miles and 957 feet, reduced to the true measurement on the parallel, when a new meridian was determined, and the prime vertical laid off as before.

It was at this station that two sets of lunar culminations were observed during the lunation of the month of August; but the locality was so unfavorable as regarded its suitableness for an encampment as to compel us to advance without continuing the series of observations.

We were now on or near the divide of the valleys of the Red Fork of the Arkansas and the North Fork of the Canadian rivers, where gypsum abounded, and the soil was impregnated with Glauber salts, rendering the water throughout this region bitter and unpalatable. It was near the close of August, and we were favored with a few showers of rain, which we caught from the roofs of our tents, furnishing an inadequate supply of fresh water for the camp alone, while the cattle had to rely upon the bitter water in the streams, or more often in holes, which proved very injurious to them. The pasturage was very deficient; a large extent of the prairie had been recently burnt by the Comanches in their system of manœuvering the herds of buffalo.

At a distance of one mile and 3,108 feet west of the transit station a monument of stone was erected upon the ridge overlooking the valley of the Red Fork of the Arkansas, which is a boundary mark.

The third guide line was extended from the last transit station, a distance of twenty-four miles and 5,052 feet, reduced to the true measurement on the parallel to the further or western bank of the North Fork of the Canadian river, which is marked by a monument on the parallel or boundary. It is a post and mound of earth, fifty feet distant from the bank of the river, and is about midway between two small creeks. The bank of the river is here a steep red bank, and on the opposite side of the river the ground is low and sandy. The guide line for the last ten miles lies almost parallel with the general direction of the river, and crosses it for the first time about two miles back, and re-crosses it about one mile back, and again crosses it for the last time near the mark here erected. The river then bends, being in its course more nearly at right angles to the line, and from the reconnaissance beyond soon again changes its course, the general direction being nearly parallel with the boundary line.

The survey and marking of the line ceased at the monument erected on the west bank of the North Fork of the Canadian river.

During the entire progress of the work the heat had been very oppressive, particularly during the first three weeks of August, when the thermometer rose to 102° and even as high as 107° of Fahr. in the shade between 12 m. and 2 p. m.; and the southerly wind, though very strong, was so heated that it seemed to have just issued from a furnace. The temperature had now (September) become much more favorable for the field operations, but a serious difficulty was interposed to the prosecution of the work in the absolute want of water. The work was already advanced ten miles beyond the most westerly camp occupied, the only point where water, after the most diligent search, could be found. The bed of the North Fork above our camp was entirely destitute of water, except in a few holes in which the buffalo had stamped, and the quantity wholly inadequate for all of our cattle. At our camp the water gushed from the bank of the river, furnishing a large supply of the best water we had enjoyed since leaving the Neosho river. It was soon lost in the deep sands of the river, which again presented the same dry bed as above our camp.

The last sixty miles of the survey had been prosecuted under the greatest disadvantages as regards the supply of water. Previous to reaching the Red Fork of the Arkansas we found the soil impregnated with the earthy salts; from the nature of our survey our progress was slow, and still more retarded by the necessity of encamping at points where fresh water could be found, which oftentimes removed our camp ten or fifteen miles from the working party on the line; unavoidable, yet rather hazardous, as we were now in the range of the Comanches, some of whom had visited our camp, and whose trails, tending across our line northerly, indicated that they were numerous, as by dividing our party it might invite an attack upon our train. One of the considerations that governed us in taking oxen for draught animals in preference to mules was that the latter are highly prized by the Comanches, which alone would have been sufficient to induce an

attempt to stampede them, had we had such a number as would have been required for our train. All the Comanches who visited our camp professed to be friendly, but our watchfulness was not relaxed at any moment. It had been our practice from the outset to detail a guard, as well for the camp as for the cattle while being herded to graze.

Agreeably to the advice received at Fort Gibson, our party was increased nearly one-third above the number estimated, in consequence of the apprehensions felt on the frontier of the Comanches attacking small parties. It increased our expenditures in some degree; however, no further supply of subsistence was purchased, as the additional men were employed as hunters and scouts, and who, in the region of the Red Fork and North Fork, were quite successful in hunting and furnishing large supplies of buffalo meat, venison, and wild turkeys. This supply of fresh provisions served to economize our small stores.

On reaching the Red Fork, the only fresh water found issued from the ground, flowed or rather stood upon the surface, over a distance of a few hundred yards, and then disappeared, presenting the appearance rather of a marsh than of the bed of a rivulet. The water was exhausted during the day by the camp and cattle, but was replenished during the night from its hidden source. We were forced to remain here some days, while search was made in advance for grass and fresh water. The Red Fork was almost dry, the little water standing was very brackish, and its entire bed encrusted with deposits of crystallized salt; and the prairie beyond had been recently burnt for some distance, limited in extent by the streams, which were brackish. After a fruitless search, the quartermaster reported against proceeding, as the loss of the train would result; the cattle already exhausted by hard service over a country intersected by numerous streams and ravines, whose banks were almost vertical, the country west of us destitute of an adequate supply for their wants, it seemed unfavorable to the further progress of the work. But we were reluctant to abandon the work, and determined to push forward a few days, hoping that further search would relieve us from our difficulties. No good water was found until we reached the valley of the North Fork, where a small pond, about a mile from the river, supplied our necessities. In the bottom lands of this river the pasturage was abundant and of good quality. Large herds of buffalo had resorted here for the water and the fine pasturage. This supply of water seemed limited to a very small section of country.

The work ceased at a point easily to be distinguished. At the monument the bearings of some notable points of topography were recorded, and the locality minutely described in the notes.

By referring to the general map of the Creek country accompanying this, it will be observed that the boundary line beyond the crossing of the North Fork of the Canadian river will follow nearly the dividing ridge of land between the valleys of the North Fork of the Canadian and Canadian rivers. The latter river is laid down from the surveys of Simpson and Abert; and the former from the survey of the Cherokee boundary by McKoy, in 1837, the records of which are n the Bureau of Topographical Engineers.

It is this portion of the northern boundary that remains unmarked, and which has an extent of near sixty-one miles.

It is very questionable whether the continuation of the work would produce results commensurate with the expenditures required to effect its completion. It is not immediately required by the wants of either country conterminous to the boundary, as the settlements by either nation are not as far west as this by more than one hundred miles, and upon the line there is no settlement beyond the Arkansas river, one hundred and fifty miles from this point. Moreover, it is doubted whether settlements will be made even as far west as the portion of the boundary now marked, in consequence of the scarcity of water in dry seasons.

At the last camp occupied on the line, a few sets of observations for latitude were taken with the sextant, (the wires of the transit were too much impaired to be used for this purpose,) which, however, could not be applied as rigid tests of the accuracy of the work, but were sufficient to confirm the work executed in accordance with the instructions. "Operations of this kind are approximations to the truth; and the higher the order of instruments employed, and the higher the order of mathematical considerations and of formulæ involved, the nearer will be that approximation to the exact truth. But there is a limit of utility which should not be disregarded, and which should be allowed to control, in preference to processes interminable in the time they employ, and totally disproportionate in their results in reference to the expenses which they require."

There was some reason to suspect a want of accuracy in the preservation of the true direction of the guide line, as the wind was very strong and from the same direction, nearly perpendicular to our line of direction; and, as the instruments and targets always occupied the most elevated positions, they would be subjected to its greatest influence, sometimes rendering the instruments too tremulous to observe for some moments, and requiring that the targets be braced to prevent deflection.

The result of the sextant observations would indicate that no error of great magnitude had been committed; but the result is not sufficiently precise to warrant a correction of the position of the monuments erected on the boundary.

The monuments are placed at intervals of about five miles, in prominent positions on the crest of the ridges. Where the guide line crosses the branches it is sufficiently well indicated by the stumps of the trees cleared away to open a vista for the instrument and a passage for the chain measurement. The latter part of the boundary is not so frequently marked by the mounds of earth, for the surface had become so dry and hard as to render it almost impenetrable to the pick and spade. But in this portion of the boundary long vistas were opened for the instrument and measurement, first, near and on the east side of the Red Fork of the Arkansas; and second, on the divide of the Red Fork and North Fork of the Canadian rivers, and thence in its parallel course with the latter river. These clearings will remain conspicuous for a great length of time, by the stumps and fallen trunks of trees. This line being the shortest to the ranges of

the Buffalo, from the lower settlements of the Osages, it may become one of their principal trails, and thereby be preserved, which would facilitate the finding of the monuments at some subsequent time; and the monuments, being a little removed from the guide line, might escape the observation of the Indians and thus be saved from destruction.

Finding the valley of the North Fork of the Canadian fertile, we determined to return to Fort Gibson by this route. We had apprehensions of a deficiency of water only, whereas, on the outward route, a deficiency of both grass and water we knew existed.

As our journeys would be short on account of the condition of our cattle, it would be practicable to make a good survey of our return route, which would add somewhat to our knowledge of the topography of the country.

The survey was commenced at a point on the boundary where the river took a more southerly direction, and was joined with the boundary work again at Fort Gibson, which afforded the means of testing its accuracy.

There were 27 working days; the whole number of courses were 1,048, and the entire distance measured with the chain, thus furnishing a result far more satisfactory than a mere reconnaissance, and accomplished without any additional expenditure of the funds of the boundary. All this work was reduced to latitude and departure, and laid down upon the general map of the Creek country.

The valley of the river, until in reach of a point near the source of Little river, is very destitute of timber; the prairie gently undulating, and the soil of good quality on the south side of the river; that on the north side is very sandy. The country thence becomes more hilly, and timber of small growth is found, but more abundant and of a better quality as we descend towards its confluence with the Canadian river.

Near the sources of Little river the North Fork and Canadian rivers are not more than ten or twelve miles distant, being so near that Lieutenant Abert laid down a branch as a tributary of the North Fork, which, by our survey, is shown to be the North Fork itself.

Our survey also places the confluence of the North Fork and Canadian rivers somewhat more easterly than it is represented by his reconnaissance, but as far as we were enabled to observe, our survey seemed to confirm the general accuracy of his reconnaissance of this portion of country.

The general map of the Creek country, accompanying, is sufficiently in detail to afford a good representation of the country traversed on our outward and return routes. It is drawn upon a scale of $\frac{1}{633600}$, or nearly ten miles to one inch. The detailed maps of the boundary are drawn to a scale of $\frac{1}{126000}$, or 4,000 feet to one inch.

The report of Dr. Woodhouse is herewith transmitted. He was obliged to leave soon after his return from this duty, on another western expedition. After an examination of the natural history collected by him, he deposited it in the Academy of Natural Sciences of Philadelphia; on his return a more detailed report of it will be rendered to the bureau. Accompanying his report are the records of

meteorological observations made by him, and the list of diseases that came under his treatment.

I am, sir, very respectfully, your obedient servant,

J. C. WOODRUFF,
1st Lieutenant Topographical Engineers.

Colonel J. J. ABERT,
Chief of the Corps of Topographical Engineers,
Bureau of Topographical Engineers, Washington, D. C.

Longitude from Greenwich of Fort Gibson, Cherokee nation; of a station 83.033 *miles west of Fort Gibson; and of a station* 179.001 *miles west of Fort Gibson, from moon culminations observed at those points, by Lieutenant Woodruff, of the United States Topographical Engineers.*

Old block-house at Fort Gibson.

No. of series.	Date.	Mean long. from each series.	No. of wires obs.	Products.	Sums of products.	Sums of wires.	Continued mean.
	1850.	*h. m. s.*		*s.*	*s.*		*h. m. s.*
1	June 24	*6 20 65.38	20	1307.60	2501.20	40	*6 20 62.53
2	25	59.68	20	1193.60	3795.70	65	58.40
3	27	51.78	25	1294.50	5316.46	88	60.40
4	28	66.12	23	1520.76	.....	.....	.....

Longitude of old block-house at Fort Gibson *6*h*. 21*m*. 00*s*.41

Station 83.033 *miles west of Fort Gibson.*

No. of series.	Date.	Mean long. from each series.	No. of wires obs.	Products.	Sums of products.	Sums of wires.	Continued mean.
	1850.	*h. m. s.*		*s.*	*s.*		*h. m. s.*
5	July 19	*6 26 78.34	15	1175.10	2688.10	40	*6 26 67.20
6	21	60.52	25	1513.00	3999.10	65	61.52
7	22	52.44	25	1311.00	5479.50	85	64.47
8	23	74.02	20	1480.40	7129.75	110	64.82
9	24	66.01	25	1650.25	8759.00	135	64.88
10	25	65.17	25	1629.25	.....	.....	.....

Longitude of station 83.033 miles west of Fort Gibson *6*h*. 27*m*. 04*s*.88

Station 179.001 *miles west of Fort Gibson.*

No. of series.	Date.	Mean long. from each series.	No. of wires.	Products.	Sums of products.	Sums of wires.	Continued mean.
	1850.	*h. m. s.*		*s.*	*s.*		*h. m. s.*
11	Aug. 23	*6 33 33.96	18	611.28	1816.53	43	*6 33 42.24
12	24	48.21	25	1205.25	.....	.....	....

Longitude of station 179.001 miles west of Fort Gibson *6*h*. 33*m*. 42*s*.24

Computations by John Downes, Philadelphia, March 15, 1851.

PHILADELPHIA, *January* 6, 1851.

SIR: I have the honor to submit herewith a short and imperfect report of the natural history of the country as it came under my observation while attached to the topographical party under your command during the past season, while engaged in running the northern and western boundaries of the Creek nation.

I say imperfect report, for, being about to leave again immediately, with Captain Sitgreaves, for the exploration of the river Zuñi, I have not time to give my collection the necessary examination, but upon my return I intend to present a more extended and more satisfactory report, both of last and this season's observations.

On the 15th day of July we arrived at Bald Eagle mound, the point where the survey was suspended last year. There the timber is getting quite sparse and confined almost wholly to the water courses, but is of a good quality, being principally oak, walnut, hickory, maple, mulberry, beech, and cottonwood.

The soil is a rich alluvial, producing a rank growth of tall grass.

The red sand and mountain limestone make their appearance at many points, rendering the surface quite rough in places; they are found at various points from here to the point where the line crosses the Red Fork. The character of the soil from here changes gradually, becoming more thin, being a red argillaceous loam, much the color of brick dust, and containing much alumina, which remains suspended in the water constituting the coloring matter, and rendering it very thick in all this section of country.

As we advanced the grass became short, of a finer quality, and quite brown, which was caused, I suppose, by the buffalo having eaten it off in the spring; then the weather being so dry it had not recovered its vigor. On many of these prairies there was scarcely a flower to be seen, which I attributed to the drought.

The banks of the streams are almost perpendicular and rocky; on many the thickets are so dense, being intertwined with briars and climbing plants, that the crossings were very difficult. In some places there are ravines upwards of sixty feet deep, with almost perpendicular banks.

Throughout all this country wild turkeys, (*Meleagris gallipavo*,) also deer, (*Cervus virginianus*,) and a number of wolves abound; one of which I have just described, hitherto unknown to naturalists.

About seventy miles from the Arkansas, we first came to the village of the prairie dog, (*Arctomys ludoviciani*, ORD.;) with them also were the burrowing owls, (*Syrnium cunicularia*.) Some of these villages covered about sixty acres. Their burrows are about twenty feet apart and the grass growing upon the whole area is eaten off closely. Not far from here I found the barn swallow, (*Hirundo rufa*) and cliff swallow, (*Hirundo lunifrons*, SAY.,) very abundant.

Before crossing the Red Fork we struck a strip of dense timber, principally black-jack oak, (*Quercus ferruginea*, MICH.,) through which we passed about eight miles. The soil was very sandy. We then came to a prairie which lies between this and the river, covered with a short grass. Within a short distance of the river there is a

range of large sand hills or drifts. The sand appears to have been carried from the bed of the river, and is piled up in immense drifts. This may be accounted for by the prevailing winds in this region being from the south, as they are confined to the north bank of the river.

The river we found dry, and its bed was covered with an incrustation of salt (*muriate of soda*) produced by the evaporation of the water, which is excessively brackish. It presented a curious appearance, looking much as if it was covered with drifted snow. Here I first saw the Texian hare, (*Lepus texianus.*)

On the opposite side of the stream the banks are bluff, but not high, and consist of a red loam, with limestone making its appearance at different points. The banks are almost destitute of timber. Here commences a fine rolling prairie, which had been burnt by the Comanches, and it was covered with large flocks of plover, (*Tringa barbramii.*) They appeared to be feeding on the parched grasshoppers. Over this we passed about ten miles before we could procure grass for our animals. At the edge of the burnt prairie we encamped on a large stream, the water of which was found to be exceedingly bitter, being strongly impregnated with Glauber salts, (*sulphate of soda.*) This we found throughout the gypsum region we were just entering.

Gypsum, in all its varieties, we found about twenty miles from the Red Fork, and very abundant; it forms a high ridge on the edge of the cross timbers, and runs nearly north and south. In many places there are ridges extending out for some distance, forming very singular hills, the sides of some being about ninety feet perpendicular, flat on the top, and covered with this rock.

The cross timbers commence on this ridge. They consist principally of oak, black-jack, (*Q. ferruginea,*) with a sandy soil, after passing through which we struck a prairie extending to the North Fork of Canadian, and covered with a good quality of grass, on which numerous herds of buffalo (*Bos americanus,* Gmel.) and deer (*C. virginianus*) were feeding. Near the river the large sand drifts, similar to those of the Red Fork, are found, and are covered with a small grape, also plums and the American colocynth, (*Pucumis perennis,* Juss.) On the banks of this stream we found growing in many places the small-leaved elm (*Ulmus alata*) and cotton-wood, (*Populus angulata.*) The country on the opposite side of the river we found to be more inviting, being a better quality of soil and timber. About thirty miles down this river from our last camp on the line we came across the best building stone I have seen in this section of country. It is a good quality of marble, and very abundant. Indications of coal are seen at various points along this river.

As we passed down this river the character of the country keeps changing as we approach the mouth. The country becomes more hilly, water abundant, and a better quality of timber, such as the small-leaved elm, (*Ulmus alata,*) hackberry, (*Celtis integrifolia* and *C. occidentale,*) cotton-wood, (*Populus canadensis,*) (*P. monilifera* and *P. angulata,*) mulberry, (*Morus rubra,*) walnut, black and white, (*Juglans niger* and *J. cineria,*) pecan, (*Curya olivæformis,*) willows,

(*Salix conifera, S. nigra, and S. Longifolia,*) ash, (*Fraxinus quadrangulata, F. caroliniana, and F. tambucefolia,*) sycamore, (*Platorinus occidentalis,*) and most of the trees common to the low grounds of the Arkansas. Oak and hickory form the highland growth and the forest of the country within sixty miles of the forks of the Canadian.

My collections of plants number seven hundred and fifty-seven (757) specimens, and are, for the most part, different from last year's collection.

Of quadrupeds there are five specimens, among which are two animals which I have described as the North American jackal, (*Canis frustror.*) The description I read before the Academy of Natural Sciences of Philadelphia. A committee has been appointed to examine and report for publication.

The reptiles number thirty-six (36) specimens, and from a cursory examination a number appear to be new.

Eight specimens of fish, some of which are new also.

One hundred and eight (108) specimens of shells, containing many duplicates, however.

Seventy-five (75) specimens of birds. Arriving late in the country, I found the birds moulting, which accounts for the small number collected.

The party were generally very healthy, considering the number of men, in comparison with last season, when we had but half the number, and double the amount of sickness of this year.

I attribute this partially to our selecting high grounds for our encampments; whereas last year the season was wet, and we were encamped generally on the border of some creek in the shade. This season we were on the high grounds in the sun.

The principal diseases were bilious remittent and intermittent fevers, diarrhea and catarrhal opthalmia. With the latter nearly the whole camp were affected, but it yielded readily to treatment. I believe it was produced by the heated and dry state of the atmosphere and the exposure to the sun's rays.

Accompanying you will find a list of the diseases with which the party were effected; also, my observations with the aneroid barometer and thermometer.

The collections I have carefully overhauled, and at present have stored them carefully at the Academy of Natural Sciences of Philadelphia.

I have the honor to be, very respectfully, yours,

S. W. WOODHOUSE, *M. D.*

Lieutenant J. C. WOODRUFF,
U. S. Topographical Engineers.

The following is a list of the diseases that occurred in camp during the summer of 1850:

	No. of cases.
Fibris intermittens	12
Fibris remittens	7
Diarrhea	12
Constipatio	1
Bilary derangement	1
Dysentery	1
Rheumatism	3
Pleuritis	1
Scurvy	1
Catarrhal opthalmia	8
Morbus cutis	1
Poison	3
Gonorrhœa	1
Syphilis	1
Furunculus	1
Punctured wound of scrotum	1
Incised wound of forearm	1
Sprain of wrist joint	1
Sprain of ancle joint	1
Sprain of loins	1
Total	59

S. W. WOODHOUSE, *M. D.*

The following observations with the aneroid and mercurial barometers were furnished me by Doctor Wells at Fort Gibson.

Date.	Hour.	Aneroid.	Mercurial.	Remarks.
1850.				
June 21	6 a. m.....	29.400	29.630	
	7 a. m.....	.425	.638	
	8 a. m.....	.420	.634	
	9 a. m.....	.410	.634	
	10 a. m.....	.420	.646	
	11 a. m.....	.420	.646	
	12 m	.390	.646	
	1 p. m.....	.375	.634	
	2 p. m.....	.375	.638	
	3 p. m.....	.355	.626	
	4 p. m.....	.350	.618	
	5 p. m.....	.345	.618	Distant thunder.
	6 p. m.....	.350	.618	Do.
	7 p. m.....	.355	.622	Do.
	8 p. m.....	.375	.622	
	9 p. m.....	.374	.618	
	10 p. m.....	.374	.626	
	11 p. m.....	.375	.630	
	12 p. m.....	.376	.634	
	1 a. m.....	.376	.634	
	2 a. m.....	.374	.630	
	3 a. m.....	.375	.626	
	4 a. m.....	.375	.614	
	5 a. m.....	.395	.638	
	6 a. m.....	29.405	29.638	

Date.	Aneroid.				Mercurial.			
	Sunrise.	9 A. M.	3 P. M.	9 P. M.	Sunrise.	9 A. M.	3 P. M.	9 P. M.
1850.								
Oct. 17	29.170	29.165	29.007	29.075	29.402	29.390	29.311	29.315
18	.295	.363	.312	.330	.461	.528	.567	.563
19	.350	.412	.350	.365	.579	.630	.705	.646
20	29.362	29.375	29.380	29.260	29.650	29.681	29.646	29.614

CAMP AT BALD EAGLE MOUND.

Observations on the aneroid barometer, state of the atmosphere, and direction of the wind during the months of July, August, and September, 1850.

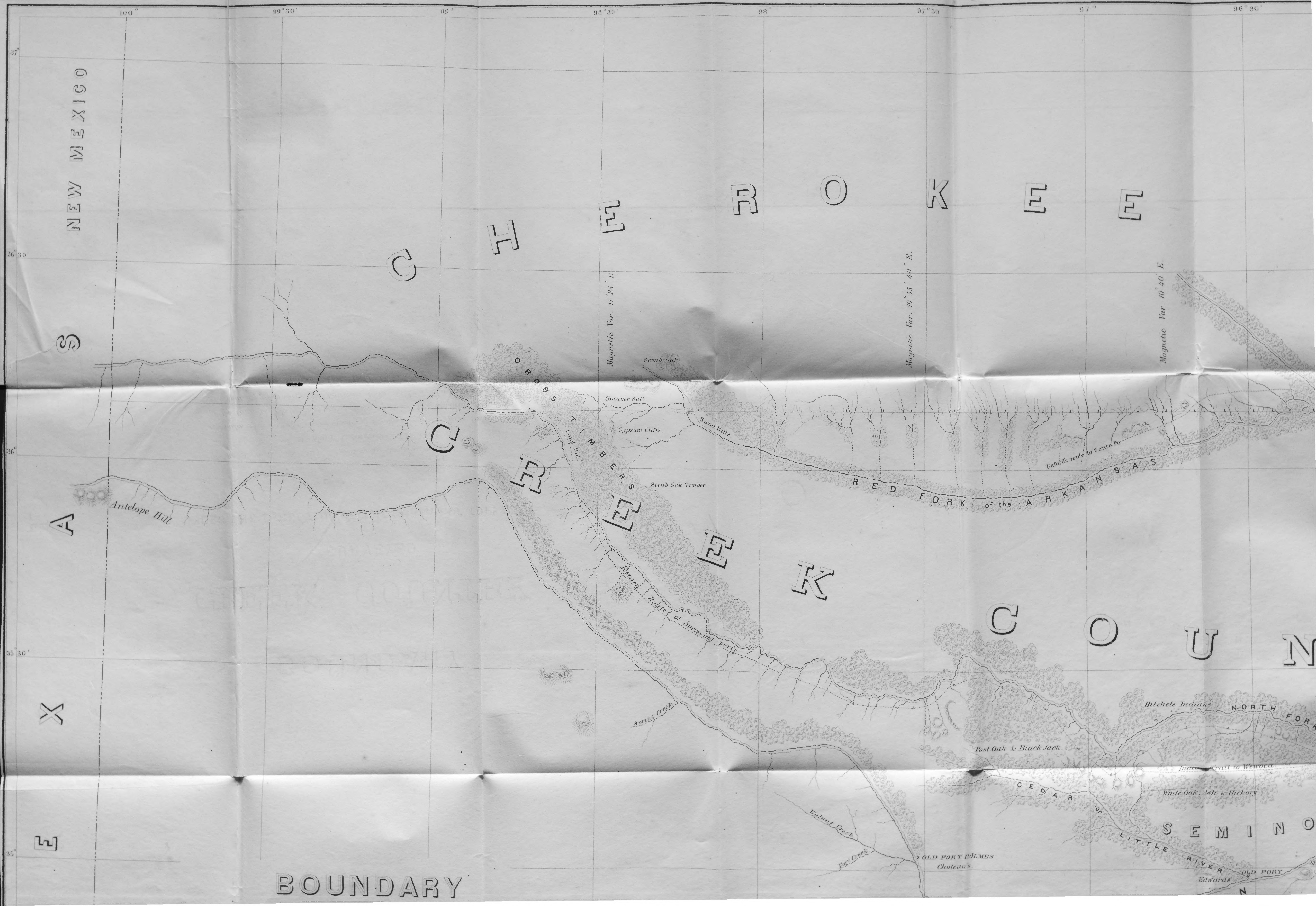
Date.	Sunrise.			9 A. M.			3 P. M.			9 P. M.			Remarks.
July 16	28.825	S.W	Clear.....	28.862	S.....	Clear.....	28.662	S.....	Clear	28.906	W.....	Cloudy.....	At 6 a. m. became cloudy, and lightened considerably.
17	28.987	N.E	Cloudy....	29.025	N.E.	Cloudy.....	28.991	E.N.E.....	Cloudy	29.000	N.E.....	...do.....	At 3 p. m. distant thunder to the south.
18	28.991	E.N.E.....	....do.....	29.033	E.	....do.....	28.837	E.S.E.....	....do.....	28.925	E.....	Clear.....	
19	28.912	S.E.....	Clear.....	28.930	S.E	Clear	28.897	S.S.W.....	Clear	28.875	S.W	...do.....	
20	28.916	S.....	....do.....	28.933	S.S.W	....do... ..	28.833	S.W.....	...do.....	28.908	S.W	Cloudy....	
21	28.920	S.W	....do.....	28.956	S.S.W	....do.....	28.881	S.S.E.....	...do.....	28.512	S	Clear.....	
22	28.887	S.....	... do.....	28.908	S.W.....	....do.....	28.875	S.S.W.....	...do.....	28.881	S.W	...do.....	
23	28.925	S.....	....do.....	28.954	S.W.....	....do.....	28.903	S.W.....	...do.....	28.897	S.W	...do.....	
24	28.925	S.....	....do.....	28.950	S.S.E.....	....do.....	28.882	N.N.E.....	...do.....	28.905	S.E.	...do.....	
25	28.725	N.E	....do.....	28.855	S.S.E.....	.... do.....	28.895	N.E.	Cloudy.....	28.925	E.....	Cloudy.....	
26	28.916	S.E.	....do.....	28.995	S.S.E.....	....do.....	28.878	S.....	Clear.....	28.906	S.E	...do..... .	
27	28.885	S.E.	Cloudy	.....	.....	.....	.....	.....	.....	28.885	S.E	...do.....	At 3 a. m. it rained heavily and continued until 6 a. m.; much thunder and lightning.
28	28.825	S.E.	....do.....	28.875	S.W.....	Cloudy	28.836	S.W.	Clear	28.875	W.N.W....	...do.....	At 3 p. m. distant thunder to the north.
29	28.950	Calm.....	Clear.....	.....	.....	.....	.....	.....	.....	28.994	W.....	Clear.....	
30	28.887	W.N.W...	Cloudy	.....	.....	.....	.....	.....	.....	28.875	S.E.....	...do.....	
31	28.837	S.E.....	Clear.....	.....	.....	.....	.....	.....	.....	28.806	S E.....	...do.....	
Aug. 1	28.847	S.S.W	.. .do.....	.....	.....	.....	28.896	S.W.....	Clear	28.916	S.W.....	...do.....	
2	28 952	S.....	....do.....	.....	.....	.....	.....	.....	.....	28.906	S.W.....	...do.....	
3	28.887	S.S.W	....do.....	.....	.....	.....	28.780	W.S.W....	Clear	28.815	S W.....	...do.....	
4	28.806	S.S.E.	....do.....	28.771	S.W.....	Clear.....	28.753	S.....	...do.....	28.752	S.S.E.	...do.....	
5	28.766	S.E.....	....do.....	.....	.....	.....	.....	.....	.....	28.862	S.E.	...do.....	
6	28.903	S.E.....	....do.....	28.935	S.E.....	Clear.....	28.880	S.....	Clear	28.866	S.E.....	...do.....	
7	28.820	Calm.....	....do.....	28.951	S.....	....do.....	28.908	S.....	...do.....	28.820	S.S.E.....	...do.....	
8	28.830	S.....	....do.....	28.962	S.S.W.	....do.....	28.858	S.S.E.....	...do.....	28.875	S.E.... ...	...do.....	
9	28.908	E.	....do.....	.....	... .	.....	28.804	S.....	...do.....	28.830	S.....	...do.....	
							28.800	S.W.....	...do.....	28.858	S.S.E.....	...do.....	At 9½ p. m. a meteor seen in the south, bearing southeast.
10	28.858	W.N.W...	....do.....	.....	.....	.....							
	28.887	S. E.....	....do.....	28.895	S.W.....	Clear.....	28.883	S.W.....	...do.....	28.803	S.S.E.....	...do.....	Between 8 and 9 p. m. several meteors seen in the south.
11													
12	28.825	S.S.E	....do.....	.....	.....	.....	28.705	S.S.E	...do.....	28.700	S.S.E.....	...do.....	Do. do.
13	28.712	S.....	....do.....	.....	.....	.....	28.680	S.S.W.....	...do.....	28.650	S.W.....	...do.....	
14	28.678	S.E.	....do.....	.....	.....	.....	28.660	S.S.W.....	...do.....	28.675	Calm.....	...do.....	Thunder and lightning in the southeast at 7 p. m.
15	28.716	S.S.E	....do.....	28.778	S.W.....	Clear.....	28.708	S.E.....	Cloudy	28.737	S.E.....	...do.....	

16	28.787	S.S.E.	do	28.795	S.W.	do	28.725	S.	Clear	28.727	S.E.	do.	
17	28.687	S.S.E.	do	28.671	S.	do	28.580	S.	do	28.595	S.	do.	
18	28.525	S.S.W.	do	28.616	S.	do	28.530	S.	do	28.537	S.	do.	
19							28.512	S.	do	28.550	S.E.	do.	
20	28.645	N.W.	Clear	28.705	N.W.	Clear	28.666	N.W.	do	28.735	N.N.W.	Rain	Slight shower; distant thunder.
21	28.760	N.	Cloudy				28.675	W.	do	28.666	Calm	Clear	Shower near daylight.
22	28.645	W.S.W.	Clear				28.475	S.W.	do	28.487	S.W.	do.	
23	28.462	S.W.	do	28.512	S.W.	Clear	28.430	S.S.W.	do	28.445	S.W.	do.	
24	28.575	N.W.	do	28.623	N.N.E.	do	28.550	N.E.	do	28.545	S.W.	do.	
25	28.502	S.S.E.	do	28.555	S.S.E.	do	28.468	S.E.	do	28.458	E.	do	Wind and rain after 10 p. m.
26	28.562	N.E.	Cloudy				28.370	E.	Cloudy	28.437	N.E.	Cloudy	
27	28.375	N.E.	Rain	28.420	N.E.	Rain	28.380	N.E.	do	28.362	N.N.E.	do	Rain all day and night.
28	28.325	N.E.	do	28.340	N.N.W.	do	28.280	N.W.	Clear	28.305	N.N.W.	Clear	
29	28.280	N.W.	Cloudy	28.312	N.W.	Cloudy	28.251	N.W.	Cloudy	28.300	N.W.	Cloudy	
30	28.345	N.W.	Clear				28.323	N.N.W.	Clear	28.380	N.	Clear	
31	28.430	N.W.	do				28.420	N.N.W.	do	28.400	W.	do	
Sept. 1	28.456	W.	Cloudy	28.488	S.	Clear	28.485	E.S.E.	do	28.403	E.S.E.	do	
2	28.404	S.E.	Clear	28.427	S.S.E.	do	28.325	S.	do	28.345	S.E.	do	
3	28.337	S.E.	do	28.330	S.S.W.	do	28.233	S.	do	28.266	Calm	do	
4	28.275	N.N.W.	do	28.353	N.W.	Cloudy	28.283	N.N.W.	do	28.305	N.	do	At 7 a. m. cloudy; light showers.
5	28.300	W.	do	28.318	N.	Clear	28.278	S.E.	Cloudy	28.191	E.	Cloudy	At 9 a. m. thunder and lightning in the S.W.
6	28.212	S.S.E.	Cloudy				28.295	S.E.	do	28.375	N.E.	do	
7	28.445	Calm	Clear				28.489	S.E.	Clear	28.425	S.E.	Clear	
8	28.420	S.S.E.	do	28.445	S.E.	Clear	28.352	S.	do	28.338	S.E.	do	
9	28.353	S.E.	Rain				28.228	S.W.	do	28.250	S.E.	do	
10	28.283	E.	Cloudy				28.375	S.W.	do	28.390	S.E.	do	
11	28.427	S.S.W.	do				28.525	S.W.	do	28.512	S.W.	do	
12	28.608	S.W.	Clear							28.650	Calm	do	Calm, and heat oppressive.
13	28.660	Calm	Foggy							28.650	S.S.E.	do	
14	28.583	S.	Clear	28.575	S.W.	Clear	28.525	S.S.W.	Clear	28.620	N.W.	do	
15	28.653	N.N.W.	Fog	28.577	N.W.	Cloudy	28.652	N.W.	do	28.675	S.E.	do	
16	28.708	Calm	Fog							28.766	S.	do	
17	28.812	S.	Clear				28.705	S.	Clear	28.650	S.S.E.	do	
18	28.620	S.	do							28.770	Calm	do	
19	28.810	N.N.W.	do	28.830	N.N.W.	Clear	28.745	N.N.W.	Clear	28.720	Calm	do	
20	28.710	N.	do				28.658	S.W.	do	28.710	Calm	do	
21	28.700	E.	do							28.705	S.E.	do	
22	28.720	S.E.	do	28.730	S.	Clear	28.660	S.S.E.	Clear	28.660	S.E.	do	
23	28.670	S.S.E.	do							28.775	S.	do	
24	28.753	S.W.	do				28.755	S.W.	Clear	28.775	S.W.	do	
25	28.783	W.	do							28.840	S.W.	do	
26	28.830	S.W.	do							28.805	S.	do	
27	28.803	S.	do							28.955	S.	do	
28	29.000	Calm	Fog							29.070	N.W.	do	
29	29.120	Calm	Clear	29.145	N.	Clear	29.137	N.	Clear	29.125	N.W.	do	
30	29.125	Calm	Fog							29.105	N.W.	do	

Observations on the thermometer during the months of July, August, and September, 1850.

JULY.					AUGUST.					SEPTEMBER.				
Date.	Sunrise.	9 A. M.	3 P. M.	9 P. M.	Date.	Sunrise.	9 A. M.	3 P. M.	9 P. M.	Date.	Sunrise.	9 A. M.	3 P. M.	9 P. M.
	°	°	°	°		°	°	°	°		°	°	°	°
1	63	74	90	76	1	75	86	96	79	1	53	68	79	62
2	69	83	90	77	2	72	87	94	80	2	64	75	84	68
3	71	84	70	81	3	74	87	97	80	3	66	82	92	71
4	73	86	90	80	4	69	90	100	80	4	60	75	83	64
5	73	85	92	78	5	70	87	96	81	5	52	76	85	71
6	72	87	92	97	6	75	90	102	82	6	65	78	81	69
7	74	85	92	78	7	69	92	103	82	7	63	76	82	61
8	72	86	90	82	8	73	93	104	83	8	59	80	89	70
9	72	86	88	80	9	68	92	102	78	9	66	73	85	70
10	74	85	92	79	10	66	90	103	76	10	65	76	88	72
11	75	88	93	82	11	66	94	104	80	11	71	80	90	74
12	75	85	83	75	12	68	94	103	79	12	66	85	90	70
13	68	84	89	79	13	66	89	103	77	13	57	78	89	72
14	75	87	92	77	14	70	93	105	79	14	64	82	93	72
15	66	85	92	78	15	71	96	106	84	15	64	73	87	61
16	71	85	94	82	16	71	88	105	86	16	53	82	92	74
17	75	85	90	76	17	73	93	107	89	17	69	84	93	79
18	69	79	90	74	18	77	92	104	87	18	70	85	95	71
19	66	85	97	77	19	78	89	102	86	19	49	79	88	56
20	68	85	97	79	20	68	80	95	72	20	44	73	89½	69
21	71	87	97	82	21	65	75	85	69	21	67	78	89	75
22	70	87	96	78	22	62	83	96	78	22	65	80	91	79
23	69	87	97	81	23	71	93	104	86	23	69	83	91	76
24	70	91	100	83	24	68	85	104	69	24	67	82	93	76
25	73	87	85	73	25	63	90	102	78	25	64	81	92	74
26	67	82	87	74	26	61	67	70	60	26*	64	81		
27	70	79	86	75	27	60	68	72	64					
28	64	76	85	76	28	63	76	83	66					
29	67	77	83	72	29	65	73	80	70					
30	66	78	90	77	30	67	74	80	67					
31	73	86	95	82	31	52	70	77	61					

* I lost my thermometer.


100°
99°30'
99°
98°30'
98°
97°30'
97°
96°30'
37°
36°30'
36°
35°30'
35°
NEW MEXICO
TEXAS
BOUNDARY
CHEROKEE
CREEK COUN
SEMINO
Magnetic Var. 11°25' E.
Magnetic Var. 10°55' 40" E.
Magnetic Var. 10°40' E.
CROSS TIMBERS
Scrub Oak
Glauber Salt.
Gypsum Cliffs.
Sand Hills
Sand Hills.
Scrub Oak Timber.
Antelope Hill
Return Route of Surveying party
Spring Creek
Walnut Creek
Fort Creek
OLD FORT HOLMES
Choteau's
RED FORK of the ARKANSAS
Buford's route to Santa Fe
Hitchete Indians
NORTH FORK
Post Oak & Black Jack.
White Oak, Ash & Hickory
CEDAR
LITTLE RIVER
OLD FORT
Edwards

97°30′ 97° 96°30′ 96° 95°30′ 95° 94°30′ 94°

37°

36°30′

35°30′

35°

Magnetic Var. 10° 55′ 40″ E.

Magnetic Var. 10° 40′ E.

Magnetic Var. 10° 15′ E.

K E E

C O C O

M I S S O U R I

S

RED FORK of the ARKANSAS

Buford's route to Santa Fe

TALASEE

ARKANSAS RIVER

CHINA

VERDIGRIS RIVER

NEOSHO RIVER or GRAND RIVER

Creek Agency

FORT GIBSON

Military Road

Webbers Falls

FORT SMITH

FORT COFFEE

Cherokee Agency

SANS BOIS CREEK

To Fort Washita

To Fort Towson

N A T I O N

C O U N T R Y

DEEP FORK

Ritchete Indians

NORTH FORK of the CANADIAN RIVER

North Fork Town

Cummings

Post Oak & Black Jack

Route West to Wewoca

White Oak, Ashe & Hickory

CEDAR or LITTLE RIVER

Wewoca

South Fork of the Canadian River

S E M I N O L E S

Shawnee Village

OLD FORT HOLMES

Choteau's

RED FORK of the ARKANSAS

ARKANSAS RIVER

Creek Agency

FORT GIBSON

Military Road

Webbers Falls.

FORT SMITH

FORT COFFEE

Cherokee Agency

SANS BOIS CREEK

To Fort Washita

To Fort Towson

COUNTRY

DEEP FORK

Hitchete Indians

NORTH FORK of the CANADIAN RIVER

North Fork Town

Post Oak & Black Jack

Cummings

Rayoud

White Oak, Ash & Hickory

CEDAR

SEMINOLES

South Fork of the Canadian Road

LITTLE RIVER

OLD FORT HOLMES

Choteau's

Fort Creek

OLD FORT

Edwards

Shawnee Village

CANADIAN

Ft. Gibson & Ft. Washita Road

Dragoons Travel to Fort Washita

CHOCTAW COUNTRY

CHICKASAW COUNTRY

N.º of Meridian Stations	4
" " Monuments to mark Boundary (▲)	36
" " Lunar culminatios observed	12
" " Attitudes with Sextant	246

▲ on the return route indicates the point of termination of each day's work

Longitude of Fort Gibson, old Block-House ..... 95° 15′ 13″8, West of Gk.

Latitude " " " " " ..... 35° 47′ 34″35 North

10,000 9000 8000 7000 6000 5000 4000 3000 2000 1000

50,000 40,000 30,000 20,000 10,000 0 50,000 100,000 150,000 200,000 250,000 300,000 feet.

Scale of $\frac{1}{600,000}$.

97° 30′ 97° 96° 30′ 96° 95° 30′ 95° 94° 30′

35° 30′ 35° 34° 30′ 34°

Lith. of J. Bien, 60 Fulton Street N.Y.

BOUNDARY

OF THE

CREEK COUNTRY

SURVEYED

UNDER THE DIRECTION OF THE BUREAU OF TOP.L ENGS

Of the Northern Boundary. 79 miles & 870 feet was surveyed in 1849.
by Capt. L. Sitgreaves, Top.l Engrs.
120 miles and 792 feet of the Northern Boundary and the North Fork.
of the Canadian River was surveyed, in 1850. by L.t Woodruff, T.E.
The Southern Boundary, the Candian River, is laid down from the
surveys of Lieuts. **Simpson** *and* **Abert**, *Corps of Top.l Engrs.*

J.C. Woodruff
1st Lieut Top.l Engs

A R K A N S A S

C R E E K C O U N T R Y

C H O C T A W

Antelope Hill

Return Route of Surveying party

Spring Creek

Walnut Creek

Fort Creek

× OLD FORT HOLMES
Choteau's.

Hitchete Indians

NORTH FOR

Post Oak & Black Jack.

White Oak, Ash & Hickory

CEDAR or LITTLE RIVER

SEMINO

OLD FORT
Edwards

CANADIAN

Dragoons Trail to Fort Washita

10,000
9000
8000
7000
6000
5000
4000
3000
2000
1000

50,000 40,000 30,000 20,000 10,000 0 50,000 100,000 150,000 200,000 250,000 300,000 feet.

Scale of $\frac{1}{600,000}$.

35° 30'
35°
34° 30'
34°
100°
99° 30'
99°
98° 30'
98°
97° 30'
97°
96° 30'

Lith. of J. Bien. 60 Fulton Street N.Y.